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ABSTRACT

This introductory guide presents an overview of basic television production, including videotape cameras, recorders, and microphones; staffing needs; procedures for video camera operation; techniques for titling; lighting; factors to be considered when directing a television production; and a sequence for production activities. Diagrams and line drawings illustrate the explanations, which are presented in outline format. (PAO)

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A GUIDE TO PLANNING PREPARING & PRODUCING A VIDEOTAPE

U.S. DEPARTMENT OF HEALTH,
EDUCATION & WELFARE
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BASIC TELEVISION PRODUCTION

Most schools today own one or more portable television production units, and many have complete studios. While these pieces of equipment are often used with a great degree of regularity and imagination, we often find that the finished products seem a bit rough. Why? The cables were connected right, the heads clean, everything was in focus, but it just wasn't right.

That little something comes from knowledge, planning and practice. Equipment operation is important, but most schools already have people experienced in this area; that is why we are going on to Step B.

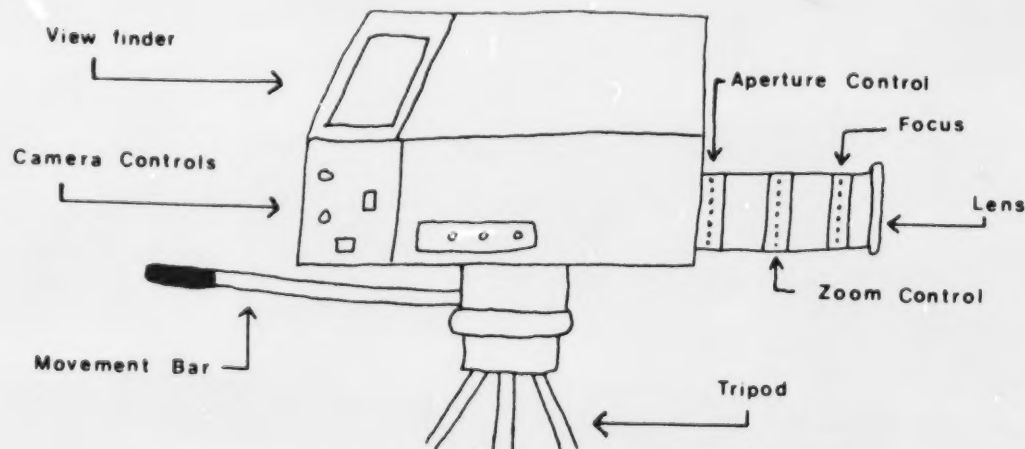
This pamphlet seeks to give you an understanding of the components in TV production; staff, titles, camera movement and lighting and how to integrate these parts to form a finished whole.

EQUIPMENT

For many this will be a review, but for the beginner an understanding of the role of each piece of equipment is an absolute necessity.

- A. CAMERA - an electronic device which converts a visual image into an electronic signal to be passed on either to a recorder or a monitor. Because it utilizes a standard optical system its operation is similar to that of a movie camera.

Video Camera

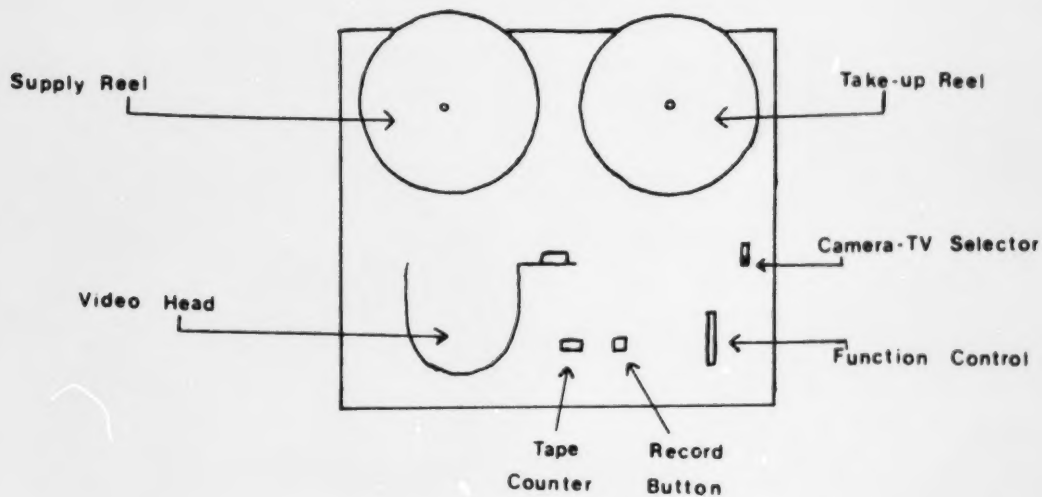


Most video cameras have the same basic parts:

1. focus adjusts camera for distance from subject.
2. aperture controls amount of light entering camera.
3. zoom adjusts lens to make subject appear closer.
4. viewfinder used to compose picture as it will appear on the tape.

- B. VTR - Video Tape Recorder, a recorder that records the image on magnetic tape in much the same fashion as an audio tape recorder. Most common in school situations are the $\frac{1}{2}$ " open reel recorders and the $\frac{3}{4}$ " u-matic cassette recorders.

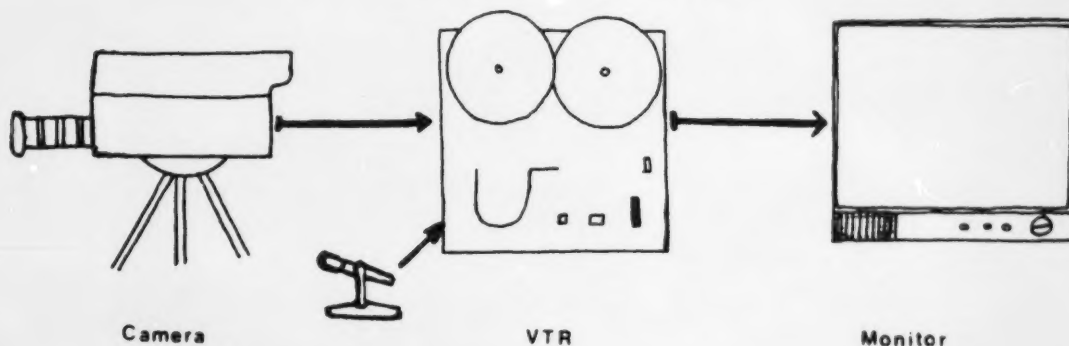
Video Tape Recorder



Illustrated is a reel to reel videotape recorder. Most u-matics and reel to reel VTR's have the same elements although they may be arranged differently. The function control includes PLAY, FAST FORWARD, REWIND and STOP.

The simple video setup for recording includes an input for both camera and microphone into the videotape recorder and an output from the VTR to the monitor.

Simple VTR Setup



- C. MONITOR - specially adapted television receiver, which accepts direct cable feeds from a camera on an off air broadcast. It can be used to "monitor" (watch) a program as it is being produced.
- D. VIDEOTAPE - a magnetic recording tape on which the visual images are stored as electronic arrangements of iron oxide particles.
- E. CABLES - connecting links between the camera, VTR, and monitor. These are specially shielded and can easily be damaged.

F. MICROPHONES - are electronic pick-ups for sound. They convert the sounds to electronic signals either for recording or amplification. The three basic types are:

1. Uni-directional - this type picks up sound only from a narrow area directly in front of it. This is especially good where there is a lot of unwanted background noise.
2. Omni-directional - this type of microphone picks up sound from all directions, which is desirable when used to pick up dialogue between several actors. This type is generally installed in the cameras of portable units.
3. Bi-directional - picks up sound from two directions. This type of microphone is especially advantageous for a debate or conversation.



Microphones can be found as:

- a. Lavalier - a small microphone worn around the neck of the talent or clipped to their clothing.
 - b. Boom - a microphone usually unseen and placed on a long arm above the speakers in the studio.
 - c. Table - a microphone placed in a stand on the table in front of the speaker.
 - d. Handheld - a microphone held in the hand of the talent. This is especially useful when the speaker is moving and talking with other talent without a microphone.
- G. TRIPOD - three legged stand for the camera. It is usually adjustable for height, and allows for vertical and horizontal camera movements. Use when possible for improved camera steadiness.
- H. DOLLY - a moveable camera stand on wheels. Heavier ones roll more smoothly.
- I. SET - the area where the talent will present the show. It includes the background and any props.

PRODUCTION STAFF

A thorough knowledge of the roles of the various people will develop an understanding of the various jobs that must be accomplished producing a television show. You may not always have this many people available, in which case jobs will have to be divided and reassigned, but all of them must be accomplished.

- A. PRODUCTION MANAGER - the person responsible for bringing together the necessary ingredients and making the arrangements so that the show can be produced. This includes everything from money, personnel and studio time through to final distribution.
- B. DIRECTOR - handles the creative assembling of the production. He or she instructs the talent, camera persons, and technical personnel during the production for shots, movement, sound, etc., in order to accomplish a particular goal.
- C. TECHNICAL DIRECTOR - operates the switcher/fader panel at the direction of the director cutting or fading from shot to shot.
- D. CAMERA PERSON - operates the camera, setting up shots according to the director's wishes.
- E. AUDIO PERSON - controls mixing and volume of all sound sources in accordance with the wishes of the director.
- F. TALENT - this is the actor, if one is being used. Although a certain amount of interpretation and imagination is necessary, this person must still operate within the overall plan of the director.
- G. FLOOR MANAGER - the director's right hand in the studio. This person cues the talent, helps move the props and cameras so that everything will be ready at the proper time.
- H. TECHNICIAN - this person's job is the care, maintenance and operation of the studio and equipment.
- I. WRITER/RESEARCHER - investigates the subject, writes the rationale, treatment, does the storyboarding (with the director) and prepares the final script.

POSITIONING THE CAMERA

- A. CAMERA SHOTS - the types of shots are identified by the distance between camera and the subject which determines the amount of subject shown and the degree of magnification. All shots completely fill the screen regardless of the size of the subject. All shots are relative, depending upon your establishing shot.
1. LONG SHOT (LS) - encompasses the entire subject and is often used as an establishing shot to orient the audience. Eg. If the subject was a person this shot would show the whole person and some of the background. This shot would probably utilize a short focal length lens for a wide range of coverage.
 2. MEDIUM SHOT (MS) - continuing with our example this shot would show our actor from the waist up. This could be accomplished either by moving the camera approximately one half the distance towards the actor or by a simple adjustment of the zoom lens or changing to a longer fixed lens. These last two methods accomplish the same thing but without moving the camera.
 3. CLOSE UP (CU) - this shot would most likely show only the head and shoulders of our actor and would be accomplished by the use of a telephoto lens or moving closer to the subject.
 4. EXTREME CLOSE UP (ECU) - this shot would most likely show only part of the face of the actor. This would require an even longer focal length lens or an even closer approach to the subject.



LS



MS



CU



ECU

B. CAMERA MOVEMENTS

1. PAN - a sweeping movement of the camera from side to side. This should be smooth and not too fast. Do not pan back and forth. Plan each pan and don't pan with a telephoto lens. When not using a tripod; plant feet firmly in a wide stance, brace the camera against the head and keep elbows in tight, then pivot from the waist.
2. TILT - this is similar to a pan except that it is a vertical or up and down movement. Follow the same precautions as above.
3. ZOOM - utilizes a variable lens capable of everything from a wide angle or long shot to a close-up or telephoto shot, without changing focus. "ZOOM IN" means to go from a long shot to a close-up. The reverse movement is a "ZOOM OUT." In both cases the camera remains stationary, but gives the impression of moving. Be careful not to overuse this technique. Do not "zoom in" then immediately "zoom out." The zoom is manipulated by simply rotating the appropriate ring on the lens barrel of the camera.
4. DOLLY - the entire camera moves either towards or away from the subject, however, in this case it is necessary to follow focus (re-focus as the distance changes). Requires extreme steadiness.
5. TRUCK - in trucking, the camera is moved sideways parallel to the subject. Can be used to follow action or merely to change angles. Requires extreme steadiness.

C. CAMERA ANGLES:

Camera angles can add to a show. They can be any of several types including high angles, low angles and those to either side. By changing angles the camera provides different points of view: objective, subjective, etc.

1. HIGH ANGLES - make your subject look diminutive.
2. LOW ANGLES - make your subject appear large and domineering.
3. SIDE ANGLES - provide a variety of view points for your audience.
4. OBJECTIVE ANGLES - camera positioned facing the subject from the audience's point of view.
5. SUBJECTIVE ANGLES - camera placed in the subject's position and aimed at the action the subject is performing.

TRANSITIONS

These are the means by which you change smoothly from one shot, scene or location to another. Transitions also signify the passage of time.

- A. FADE - a gradual increase or decrease in the brightness of the picture accomplished by adjustment of the aperture on the camera or with the fader control on the console. A "fade in" means to go from black to the picture. A "fade out" is the reverse. You can "fade out" a picture then change your scene and then "fade in."
- B. DISSOLVE - gradual transition where one shot is faded out as the next shot is faded in over it. This is accomplished by the simultaneous movement of the fader controls of both cameras in opposite directions.
- C. CUT - the instantaneous replacement of one shot with another. Continuity is very important with this type of transition.
- D. SUPERIMPOSE - the image from one camera overlaps that of another. A popular way for adding titles and captions to a show.
- E. WIPE - one picture gradually replaces another. Requires a special effects generator (SEG). If using a portable TV unit, a similar effect can be obtained by moving a piece of cardboard across the lens.
- F. SPLIT SCREEN - this requires a special effects generator and really nothing more than a wipe halted in the middle. Parts of two camera scenes are shown simultaneously.
- G. GOBO - a cut out silhouette placed between the camera and the scene to create an illusion. Eg. A cutout like a key hole which gives the impression of viewing the scene through a key hole. The camera focuses through the gobo on the scene. (Large broadcast studios use automated techniques.)
- H. OPTICAL DISSOLVE - using the focusing adjustment on the camera, defocus the picture, change the scene, and re-focus the picture.
- I. SWISH PAN - a very rapid pan from one subject to another nearby subject. This should be done quickly enough to prevent the eye from focusing on anything as the pan takes place.
- J. CROSS SHOT - cutting back and forth between two cameras set up on opposite sides of the set. Good for covering a conversation, can cover both the speaker and the listener's reactions.
- K. CROSS FADE - transition fading to total black and then fading back up to the next shot.

TITLING

Doing a professional job of titling can add a finished touch to programs. We cannot add a short course in graphics at this point, but the following are a few suggestions to keep in mind and some presentation methods that may help professionalize your production.

The TV screen is rectangular. It is three units high by four units wide. This ratio is known as an aspect ratio. All TV graphics should be kept in the same ratio. When working a one inch border should be allowed around the edge of the 11 by 14 card this will give you a safe working area of 9 inches by 12 inches. All design elements should be kept within this area. Center your information in the safe area.

- A. TV resolution is poor, therefore, bold and simple lettering is required. The following tips apply to title cards 11 by 14 inches in size.



1. Lettering should be bold, sans serif, and the minimum letter size should be 3/8 of an inch.
2. Line thickness should be no less than 1/8 of an inch if possible.
3. For shorter titles larger letters should be used.
4. Keep your titles short an absolute maximum of five lines of five words each is possible, although less may be used.
5. High contrast is desirable between letters and background (both blue and gray are good) white letters on a black background is necessary for a B + W superimposition.

B. PRESENTATION TECHNIQUES:

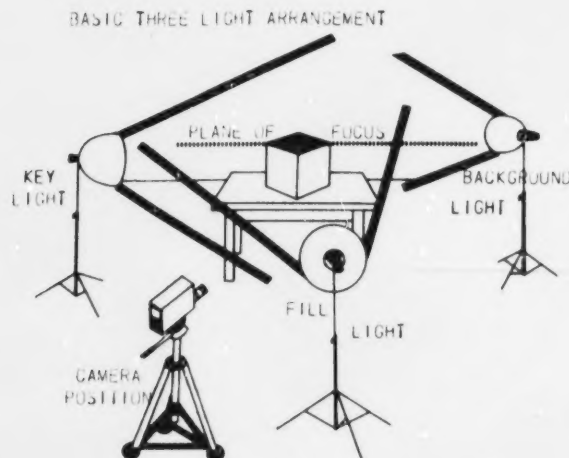
1. ROLL or CRAWL - moving presentation utilizing either a drum or scroll type of device on which the titles are affixed.
2. CARD - simple title on a card.
3. FLIP CHART - flipping hinged pages from above while chart rests on a stand.
4. MENU BOARD - colored, felt board with tracks for plastic or metal letters.
5. DROP CARDS - a stack of cards on a stand presented by pulling the card aside and dropping it.
6. CHARACTER GENERATOR - an electronic device resembling the keyboard of a typewriter which electronically creates a video signal of the desired letter.

LIGHTING

The key to a good television production is lighting. Good lighting is a necessity, it gives life and detail to the picture. An artistic arrangement of light can give depth and add highlights. Arrange the lights until the picture looks good. The following are basic lights:

- A. KEY LIGHT - usually a spot light positioned in front of and above the subject, however, care must be taken that the angle of the light does not distort the features of the talent.
- B. FILL LIGHT - provides general illumination for the scene and helps to soften any shadows. Generally provided by flood lights and scoop lights.
- C. BACKGROUND LIGHT - flat even lighting on the background. Cookie-pattern of holes put over light can cast a random pattern on the background. If set at an angle to a drape, the holes of the cookie can be brought out.
- D. BACK LIGHT - falls from above and to the rear onto the hair and shoulders of the actor. This highlights the person and makes them stand out from the background.
- E. CLIP LIGHT - small special light about 150 watts mounted on the camera. Used to improve lighting on closeups and other special situations.

Generally, a lighting ratio of 2 to 1 is desired, in other words the key light should be twice as strong as the fill light. The required light for the camera should be based on the front lights - key and fill. Lights have a color temperature. For color videotapes, adjustments must be made on the camera for proper color rendition. The best guide for proper lighting is what the picture looks like in the camera and on the monitor.



DIRECTING

It is the role of the director to supervise the actual taping of the show. In consultation with the producer, the director finalizes the script and makes decisions to bring the show together.

The director must decide on the number of cameras, their positions, as well as microphones and their positions. The script needs to be timed and the basic floor plan blocking must be worked out.

The director is also in charge of the dry run and walk through. The talent and technical crew are involved in a complete rehearsal of the entire script without taping. Each segment is cued and timed.

A. Director's Preparation after final Planning with Producer.

1. Read the script.
2. Get a floor plan as soon as possible.
3. Work out rough blocking, with the most important and major camera and microphone positions.
4. Decide on the number and type of microphones needed.
5. Mark and roughly time the script.
6. Check whether all scripts have been properly corrected, if corrections are needed.

B. Script reading for dry run.

1. Issue a call for the reading.
2. Re-explain the purpose of the show, the general production procedures, the mood of the show, etc.
3. Read segments. If it is a semi-scripted show, have the talent ad-lib all the sections.
4. Time the script carefully.
5. Set a date and place for the dry run.

C. Dry Run.

1. Hold the dry run preferably in the studio or a rehearsal hall.
2. Work out all blocking problems.
3. Always keep microphone movement and camera movement in mind.
4. Call out all cues aloud.
5. Go through the complete script, including major actions and the entire dialogue or commentary.

6. Time each segment and the over-all show. Allow time for long camera movements, music bridges, announcer's introduction and closing, etc.
7. Set a time for the walk-through, the camera rehearsal and the checking-in time for the on-the-air performance.

D. Directing Procedures.

1. Give all signals clearly and precisely. Appear relaxed but alert.
2. Cue talent before he is on the camera. By the time he starts to speak, the picture will be faded in.
3. Don't tell the floor manager just to cue "him," especially when there are several "hims" in the studio awaiting cues sooner or later.
4. Don't give the ready cue too far in advance, or people will not be ready by the time the "take" cue finally arrives (after everyone has forgotten it).
5. Keep in mind the number of the camera that is already on the air, and don't call for a cut or dissolve to that camera.
6. Don't ready one camera and then call for a take of another camera. If you change your mind, nullify the cue first and give another ready cue.
7. Talk to the cameras by number and not by the name of the cameraman.
8. Call the camera first before instructions are given. For example, "Camera two. Give me a close-up of the display: Camera three, cover shot. Camera one, dolly in."
9. After you have put one camera on the air, immediately tell the other camera what to do next. Don't wait until the last second to inform your free camera what to do.
10. If you have one camera tight on an object, put the other camera on a cover shot. Always protect yourself with a wide angle shot. But don't become a slave to this rule. If you need both cameras on tight lenses, use them.
11. If a camera goes "soft" (impaired picture quality) or fails completely while on the air, keep calm. Continue the show with one camera on a dolly lens (50mm). If the remaining camera gets caught on a long lens, go quickly to black, have the cameraman change over to a dolly lens, fade up again and continue the show. With a zoomlens there will be no problems changing the fields of view of the remaining camera.
12. If you make a mistake, correct it as well as possible and then forget it. Don't meditate on how the particular mistake could have been avoided while neglecting the rest of the show.

13. Don't get hung up on little details; keep the whole show in mind.
14. During the show, speak only when necessary. If there is too much talk, people will stop listening carefully and may miss important instructions.

E. Walk-Through.

All people directly involved with the studio operations must participate in the technical walk-through. Consider and explain the following problems:

1. Basic blocking and action of talent.
2. Camera locations and basic camera traffic.
3. Special shots and special framings.
4. Special lenses used.
5. Microphone placements, microphone boom traffic.
6. Basic cueing.
7. Scenery and prop changes; prop placement.
8. Easel positions.
9. Major lighting and special lighting effects.

F. In the talent walk-through explain to all performers major actions, positions and crossings.

1. Show the performer how to hold a particular object to get the desired shot.
2. Explain to all talent what is going on so everyone knows the continuity of the show.
3. Explain briefly the major visualization and picturization aspects.
4. Have the performers walk through the action (with microphones live).
5. Have each person go through his opening lines and then skip to his individual cue lines.
6. Give everyone enough time for make-up and dressing before the camera rehearsal.

THE TELEVISION PRODUCTION PROCESS

Phase I--Research

1. Define Need and Analyze Audience

- a. What is the topic?
- b. Who is your audience?
 - age, sex, etc.
 - educational background--How much do they know of the subject?
 - What are the beliefs, prejudices, and interests of the group?
 - How much can your audience understand at one time?
 - Why is the audience watching?

2. Establish Your Goal and Objectives

Determine exactly what it is you want to accomplish with this program, what outcomes you desire, what changes in attitude you seek, or any active responses you want to cause. Be sure everything you do aims towards the accomplishment of these goals and weed-out your program accordingly.

3. Determine the Physical Limitations on Your Program

How long is the show supposed to be? What types of equipment are available? Who will be the talent? Where will the production take place--in a studio or on location? Etc.

4. Treatment and Story Outline

The treatment is the approach used to convey your message.

- role playing
- documentary
- narrative
- dialogue
- humorous
- and so forth

Treatment may also include some ideas as to musical background, locations, types of things that may be shown and anything else contributing to the carrying of the message. Included with the treatment should be a rough story outline explaining the content and its sequencing. Sequencing at this point would be based upon the dictates of the subject matter--i.e. chronological or whatever.

5. Evaluate--cost, facilities, personnel, etc.

- a. How much will the production cost? Is money available?
- b. Are the studio facilities adequate?
- c. Are equipment and power available for location shooting?
- d. What props are needed? Are they available or easily obtained?
- e. Can the necessary visuals be prepared locally? Are special arrangements necessary? Is there sufficient lead time?
- f. Control--are the people, locations, studio, and equipment readily available?
- g. Time--Is there time available to sufficiently plan? Is there sufficient studio time available? Is there time for rehearsal?
- h. What are the capabilities of the talent? How available are they?
- i. Sound--What types of music and effects will be needed? Are they copyrighted? What costs will be involved?
- j. Will any copyrighted visual materials be used? What arrangements are necessary?

When all things have been considered, this is the point at which you decide whether or not to continue with your production?

Phase II--Writing

1. Shot List and Story Boarding

Jot down all your ideas on index cards. Divide the cards in half with a line and visualize your idea with a rough sketch of the scene as you envision it. You can also begin putting down a rough idea of the narration to accompany each of these scenes. Production notes may also be included.

Now take all of the cards and arrange into a logical sequence, one which your audience will be able to follow. This procedure allows you to check that you haven't missed anything or included anything unnecessary or misleading. Storyboarding also allows you to check for visual continuity--do you change locations logically, is the direction of movement consistent, do elements within the picture appear and disappear mysteriously.

2. Write Script

Arrange your script in columns, generally three columns are used - one for the visual description of the scene, one for the spoken narration to accompany the shot, and one for the music and/or sound effects which will back up that audio portion. Now working from your storyboard write your script--watch your transitions.

3. Check Script

- a. Do all the scenes relate to your objectives?
- b. Is there continuity both in the visual and in the audio track? Are transitions smooth?
- c. Is each scene clear and concise? Does it convey one basic idea?
- d. Do the visual and audio portions of the program compliment each other, or does the narration distract from the visual?

Phase III--

1. Arrange and Schedule--facilities, people, graphics, props, music and effects, and order necessary materials.
2. Prepare Shooting Scripts and Block Out Studio

Prepare a script for each camera listing each shot in the proper sequence for that camera. Prepare scripts for the talent, audio persons and technical director. Also prepare a drawing and mark with tape the locations of the cameras, talent props, etc. as they will be during the taping and plan the movements of each element to prevent collisions and to insure camera coverage.

3. Pre-Production Check

- a. Is the scenery ready?
- b. Is the lighting plan decided upon and set up?
- c. Is all the equipment checked out and in good working order? Are back-up pieces available?

- d. Have rehearsals, readings, walk throughs etc., been scheduled, and everyone notified?
- e. Is the blocking done?
- f. Are the shooting scripts prepared and distributed?
- g. Have all elements been located for the audio track and clearances obtained?
- h. Have all people appearing in the show signed release forms?
- i. Are the graphics completed?

Once all things have been determined to be in a go state then the final stages of production may begin.

4. Rehearsal or Walk Through

The first step is to have a reading of the parts by the talent, and to conduct a walk through. During the walk through, each person is taken through the entire production step by step so they will know where to move and what to do. This walk through also allows the light crew to make adjustments to their set up with people actually on the set. When these preliminary steps have been taken then full rehearsals can be staged.

5. Produce

6. Edit

A CHECKLIST FOR THE CAMERA PERSON

- A. Plan your shot, be aware of what is in the frame.
- B. Watch the background. The background can often be distracting to the audience. Usually, it is inappropriate to have something appearing to come out of the talent's head.
- C. Keep composition interesting; do not always put subject square to camera or center always in view finder.
- D. Give the actor "headroom" on the screen. Try not to make it look as if the top of the screen is coming down on him. Likewise, give him "faceroom" if he looks sideways. Don't jam his nose to the side of the screen.
- E. Use movement for a reason, the audience will be "sea sick" with too much unnecessary movement, don't pan back and forth or overuse the zoom.
- F. Check cables before moving the camera. Don't dolly over the cables, it will cause damage. The picture will also be interrupted if the dolly travels over the cables.
- G. Use tripod whenever possible.
- H. Check the tripod and camera attachments to make sure everything is tight and the camera doesn't slip and cause damage.
- I. Don't aim the camera at windows or lights.
- J. Avoid shooting against light walls.
- K. Don't leave the camera in a fixed position for too long a period. An image can get burned into the tubes and will appear as a ghost image on other pictures.
- L. For a burned in image, defocus the camera and point the lens towards a medium gray board or neutral color card for 20 - 30 minutes.

A FEW THINGS TO WATCH IN VIDEO

- A. Shut off VTR completely to thread tape.
- B. Do not allow VTR to just sit in "stand by" position for an extended period of time.
- C. Run off about 30 seconds of tape as a leader before beginning to record.
- D. Use a separate mike of the unidirectional type if better quality or specific sound is desired.
- E. Use a variety of shots and angles to keep the show interesting, however, don't get carried away.
- F. Watch continuity and screen direction.
- G. Make a test recording.

FOR BATTERY OPERATED PORTABLE UNITS

- A. While on battery power, shut off VTR when not recording to conserve power.
- B. The battery operated unit takes about five to ten seconds to reach speed, therefore cue talent after VTR has been running five to ten seconds.
- C. Red light in the view finder indicates that recorder is recording.
- D. Push trigger of battery operated portable unit once to start tape and once to stop it. Don't hold trigger.

TROUBLESHOOTING

1. Cables are a weak link in any VTR assembly. When possible, check cables before going out on assignment.
2. If on playback you see nothing but salt and pepper, clean the tape heads and the tape path.
3. If squiggly or static lines appear on picture playback, adjust tracking (seldom a problem when playing back a tape recorded on the same machine).
4. Bright dots flashing in a horizontal pattern means an old tape is being used. This is referred to as "dropout."
5. Machine records only half of picture, picture pulses, picture seems light with static in front of it: check threading. Tape has not been threaded properly on the VTR.
6. No picture on viewfinder after warm-up: Check the TV/camera switch on the side of the VTR. It should read "camera" for recording from or playing back in the camera. Also, check your F stop. TV switch is used for playing back into a TV monitor.
7. Make sure lens cap is off camera. Vidicon tube will be harmed if recording takes place with lens cap on.
8. If you pick up radio stations in your sound track or get a bad hum, audio cable is not working correctly. Have it checked.
9. If MOIRE patterns are caused by electrical interference, check if you are near power lines or a TV/radio station.
10. Never force plugs. If not properly aligned, they will not go in. If they are, they go in easily. Plugs only perform one function; they cannot be connected incorrectly.
11. Keep checking tape on VTR. The tape sometimes falls off the reel and winds around the capstan.
12. When threading machine, turn it off. This will keep tape from getting caught in the heads.
13. Burns can be removed from the camera by shooting a white card or grey card defocused for a period of 30 minutes to one hour.
14. Watch the tape does not jump over the last post before the take-up reel--or proper tape tension will not be maintained over the recording head.

WHY VIDEOTAPE?

SITUATION

VTR'S CONTRIBUTION

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| 1. Demonstration involved a great deal of equipment, detail work, and time when it is performed. | Saves time by taping it once for all future use. |
| 2. Action is too long in development. | Condenses time by taking scenes at appropriate intervals and playing back all together. |
| 3. Rehearsal situation requires recording and immediate playback. | Made to order for just this circumstance. |
| 4. Event takes places in a location not accessible to the student or class. | Brings the event into the classroom having used portable and shoulder-pack VTR. |
| 5. Objects are too small for class to see. | Magnifies objects using close-up lenses or microscopes. |
| 6. Local visual objects or places are separated by some distance. | Brings related visuals together onto the same tape. |
| 7. Situation requires alternate views, fairly close-up as well as distant views immediately. | Uses zoom lens as in regular photography. |
| 8. Objects can only be photographed in available light - i.e., classroom or daylight. | Handles easily. |
| 9. Needs to be shown repeatedly during same class period. | Play and review rapidly without additional threading. |
| 10. School budget does not allow many supplies. | Videotape is erasable and reusable indefinitely. |
| 11. Would like to present visual in a fully lighted classroom. | TV images are visible in any light, as are your home TV programs. |
| 12. Teacher wants to photograph or record scenes personally, but has no technical training. | Little training necessary. |
| 13. A demonstration must be seen by all students at the same time. | Without crowding, all students may follow the point of instruction as it appears on the TV screen. |